

REMARKS

The Office Action of March 7, 2007 has been received and the Examiner's comments are carefully considered. Claim 1 has been amended to clarify the molar distribution in accordance with the Examiner's remarks. No new matter is added by the amendment of claim 1. Accordingly, claims 1-23 are currently pending in this application. Claims 10-23 have been withdrawn as directed to a non-elected invention. Applicant respectfully requests entry of this amendment, which places the application in better form for appeal.

Claims 1-9 are rejected under 35 U.S.C. §112 ¶ 1 as failing to comply with the written description requirement. Claims 1-9 are further rejected under 35 U.S.C. §112 ¶ 2, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-6 and 8-9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chang et al. (US Pat. 3,917,590) (hereinafter "the Chang patent"). Claim 7 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Chang as applied to claim 1 above and in view of Watson (US Pat. 4,264,752) (hereinafter "the Watson patent"). Each of these rejections is respectfully traversed.

Claim 1 is directed to a trimeric unsymmetrical polyurethane polyol comprising the reaction product of a diisocyanate; an aliphatic diol having 1-6 carbon atoms; and a polymeric diol having at least one oxycarbonyl linkage and having from 5-20 carbon atoms. The trimeric polyurethane polyol has an average molar distribution of three monomeric units and includes a hydroxyl termination.

35 U.S.C. §112

Claims 1-9 are rejected under 35 U.S.C. §112 ¶ 1 as failing to comply with the written description requirement. More particularly, the Office Action states that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant asserts that claim 1 is supported by the specification and respectfully requests that the rejection

under 35 U.S.C. 112 ¶ 1 be removed. Amended claim 1 states "...wherein the trimeric polyurethane polyol has an average molar distribution of three monomeric units...." The polyurethane polyol described in claim 1 is the product of three monomeric units; diisocyanate, an aliphatic diol having 1-6 carbon atoms, and a polymeric diol having at least one oxycarbonyl linkage and having from 5-20 carbon atoms. According to paragraph [0018] of the specification the trimeric polymer is represented by a general structure as follows:

x moles short chain diol: 1 mole diisocyanate: y moles of polyol
where $x + y = 2$.

Therefore, the trimer described in claim 1 of the application has an average molar distribution of three monomeric units, because diisocyanate is always equal to 1 mole and $x + y$ must always equal 2.

Because the limitation of claim 1 is supported by the specification, the rejection under 35 U.S.C. 112 ¶ 1 should be removed and claim 1 should be allowed. It follows that since claims 2-9 depend from independent claim 1, claims 2-9 should also be in condition for allowance.

Additionally, claims 1-9 are rejected under 35 U.S.C. 112 ¶ 2 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant believes that the amended claim 1 overcomes this rejection, and respectfully requests reconsideration and allowance of claims 1-9.

35 U.S.C. §103

At page 4 of the Office Action, claims 1-6 and 8-9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the Chang patent.

First, the polymer of the claimed invention is an unsymmetrical polyurethane polyol. The unsymmetric polyols of the claimed invention react with diisocyanates to provide low viscosity and high solids which prevents crystallization and high viscosity. This is particularly important when the prepolymers are intended for use with coating compositions, particularly those for flow coating processes. As discussed in paragraphs [0019]-[0020] of the specification, the ratios and proportions of the short

chain aliphatic diol and the polymeric diol precursors greatly affect the viscosity of the formed prepolymer. The asymmetry of the prepolymer results in the claimed polymer having a lower viscosity level and a higher solid content. Accordingly, providing a trimer polyurethane prepolymer with a specific ratio of the short chain diol and the polyol with respect to the diisocyanate produces an effective prepolymer composition that is particularly useful for later reaction to provide polyurethane coating compositions.

Moreover, the presently claimed invention provides a trimer polyurethane prepolymer with specific ratios of the short chain diol and the polyol with respect to the diisocyanate to produce an unsymmetrical trimeric polyol. The Chang patent does not teach or suggest unsymmetric polyols, let alone the trimeric oligomers of the claimed invention, which keep the viscosity low for high solid coatings exhibiting good mechanical properties.

The Chang patent teaches a composition which comprises the reaction product of a polyurethane polyol, which must contain at least 0.075 percent by weight acidic carboxyl groups, with an alkylenimine. The claimed invention does not claim a polyurethane polyol with an acidic carboxyl group. Instead, the terminal groups of the claimed trimeric polyol have linear polyol functionality, as opposed to a branched structure of an acidic carboxyl group such as in Chang. Both terminal ends of the claimed polyol are linear structures based on the linear nature of the aliphatic diol and the oxycarbonyl linkage. Nothing in Chang teaches or suggests a trimer with such a linear polyol on either ends. Also, the Chang patent specifies carboxylic acid functional polymers that have a functionality of 3 or more, whereas the presently claimed invention specifies linear polymers with a functionality of 2. Moreover, the claimed invention does not use the trifunctional compounds such as trimethylpropane, as discussed in the Chang patent. Further, Chang requires the reaction of carboxylic acid groups that are reacted with polyimines.

Because of the deficiencies of the Chang patent, the rejection of claims 1-6, and 8-9 under 35 U.S.C. 103(a) should be reversed and the claims 1-6 and 8-9 should be in condition for allowance.

Next, the Office Action states that claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang as applied to claim 1 and further in view of the Watson patent. The Chang patent does not provide any teachings which would render the present invention obvious. As noted above, Chang does not disclose or suggest the use of unsymmetric polyols or trimeric oligomers. The Watson patent does not overcome this deficiency. Watson merely shows a polyurethane prepared from an alkylene glycol carbonate or a polyoxyalkylene glycol carbonate formed from hexylene glycol or propylene glycol. Accordingly, the present claims are not obvious over Chang in view of Watson and therefore the rejection under 35 U.S.C. §103(a) should be withdrawn and claim 7 should be allowed.

CONCLUSION

For all of the foregoing reasons, Applicant submits that pending claims 1-9 comply with the requirements of 35 U.S.C. §112, are patentable over the cited references and in condition for allowance. Accordingly, reconsideration of the rejections and allowance of pending claims 1-9 are respectfully requested.

Should the Examiner have any questions regarding any of the foregoing or wish to discuss this application in further detail to advance prosecution, the Examiner is invited to contact Applicant's undersigned representative at the telephone number provided below.

Respectfully submitted,

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